H. COULSTON.

RECEIVING TABLE FOR DRIERS AND OTHER MACHINES.

APPLICATION FILED FEB. 24, 1916.

1,189,064.

Patented June 27, 1916.

8 SHEETS—SHEET 1.

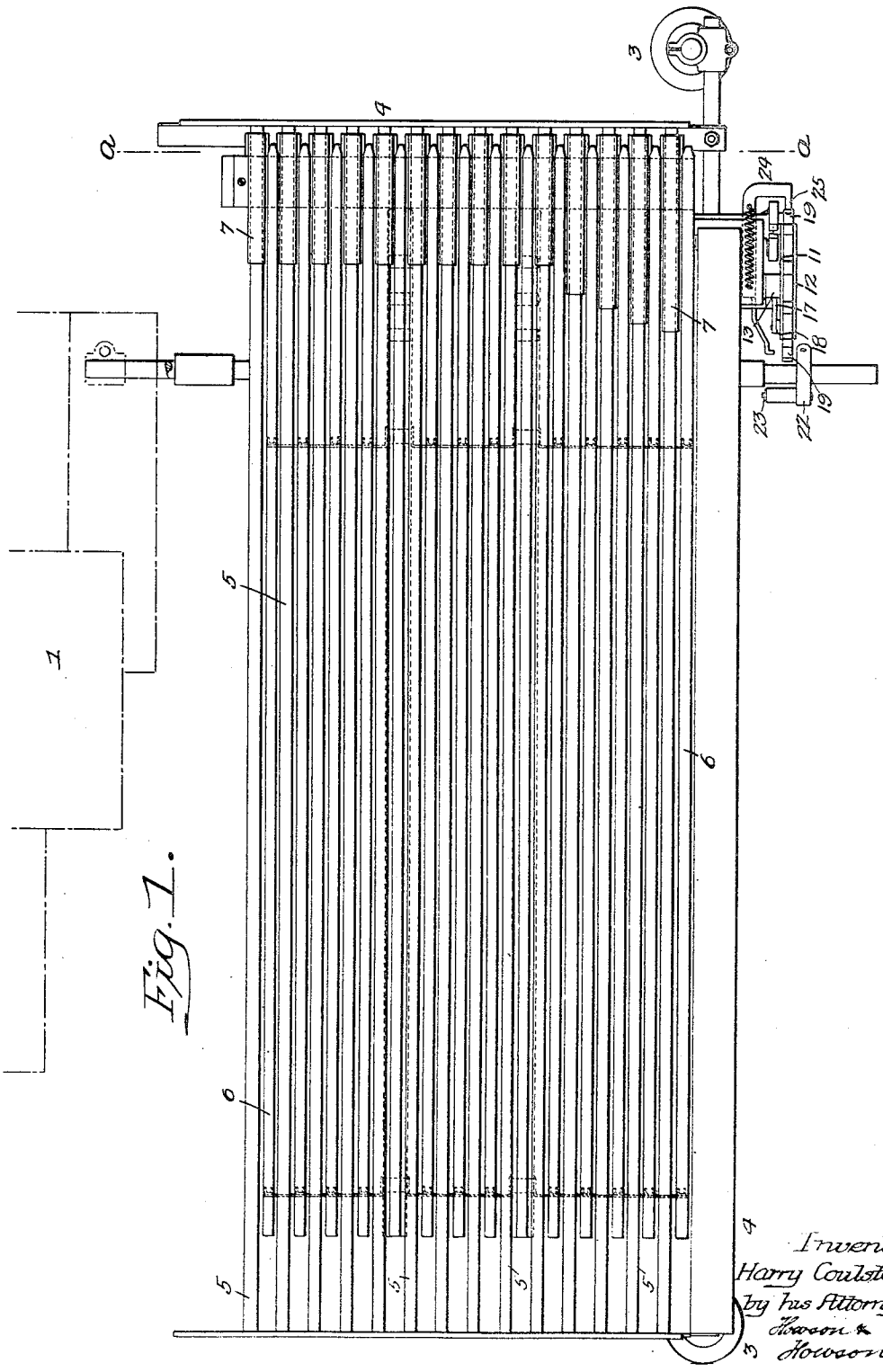


Fig. 1.

Inventor
Harry Coulston
by his Attorneys
Howson & Howson

H. COULSTON.

RECEIVING TABLE FOR DRIERS AND OTHER MACHINES.

APPLICATION FILED FEB. 24, 1916.

1,189,064.

Patented June 27, 1916.

8 SHEETS—SHEET 2.

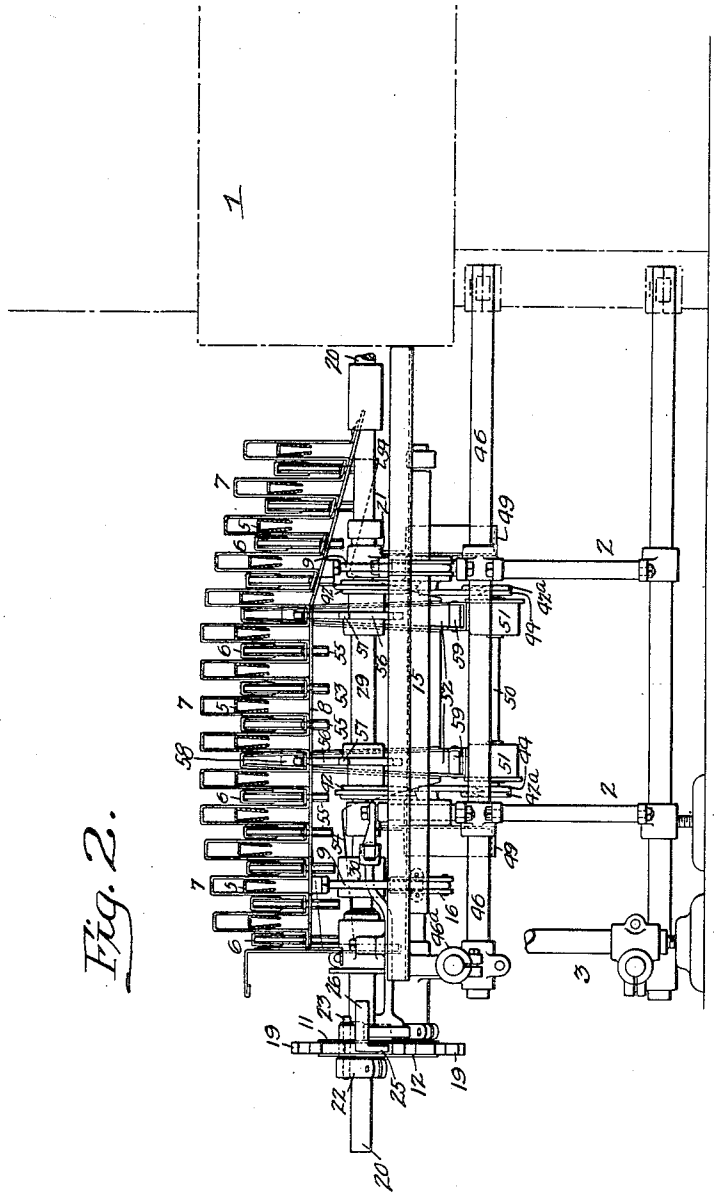


Fig. 2.

Inventor—
Harry Coulston
by his Attorneys—
Howson & Howson

H. COULSTON.

RECEIVING TABLE FOR DRIERS AND OTHER MACHINES.

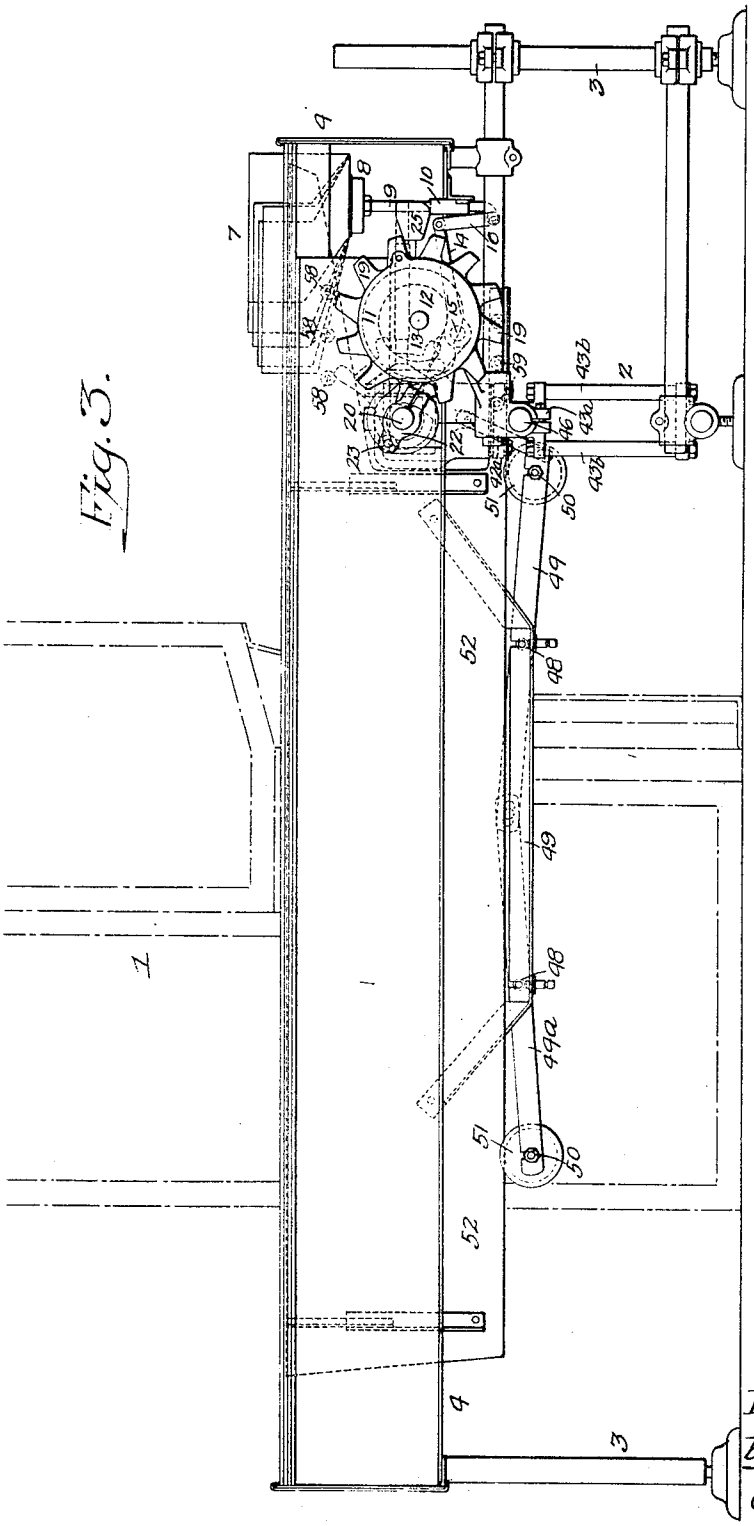
APPLICATION FILED FEB. 24, 1916.

1,189,064.

Patented June 27, 1916.

8 SHEETS—SHEET 3.

Fig. 3.



Inventor
Harry Coulston
by his Attorneys
Howson & Howson

H. COULSTON.

RECEIVING TABLE FOR DRIERS AND OTHER MACHINES.

APPLICATION FILED FEB. 24, 1916.

1,189,064.

Patented June 27, 1916.

8 SHEETS—SHEET 4.

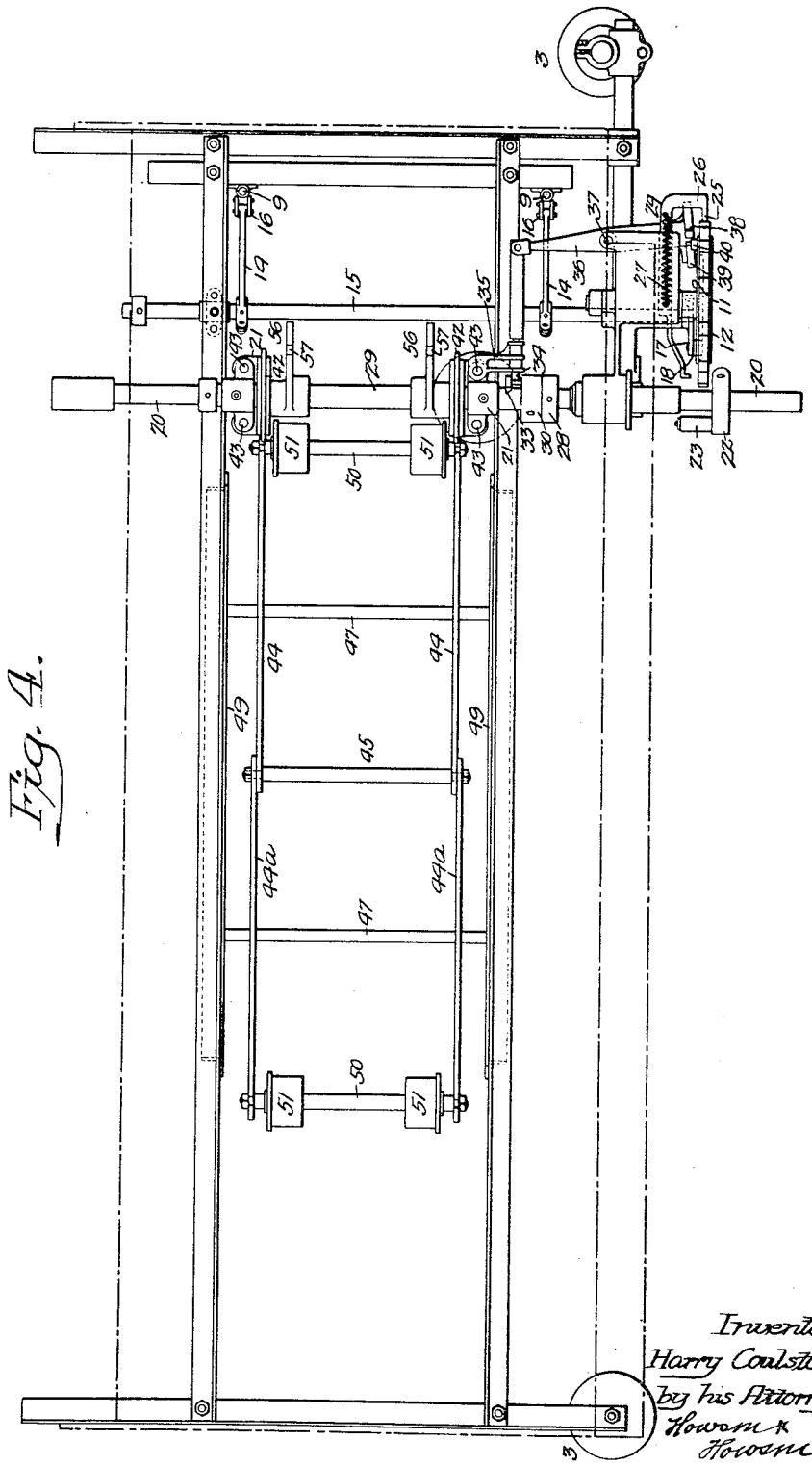


Fig. 4.

Inventor.
Harry Coulston
by his Attorneys
Howson & Howson

H. COULSTON.

RECEIVING TABLE FOR DRIERS AND OTHER MACHINES.

APPLICATION FILED FEB. 24, 1916.

1,189,064.

Patented June 27, 1916.

8 SHEETS—SHEET 5.

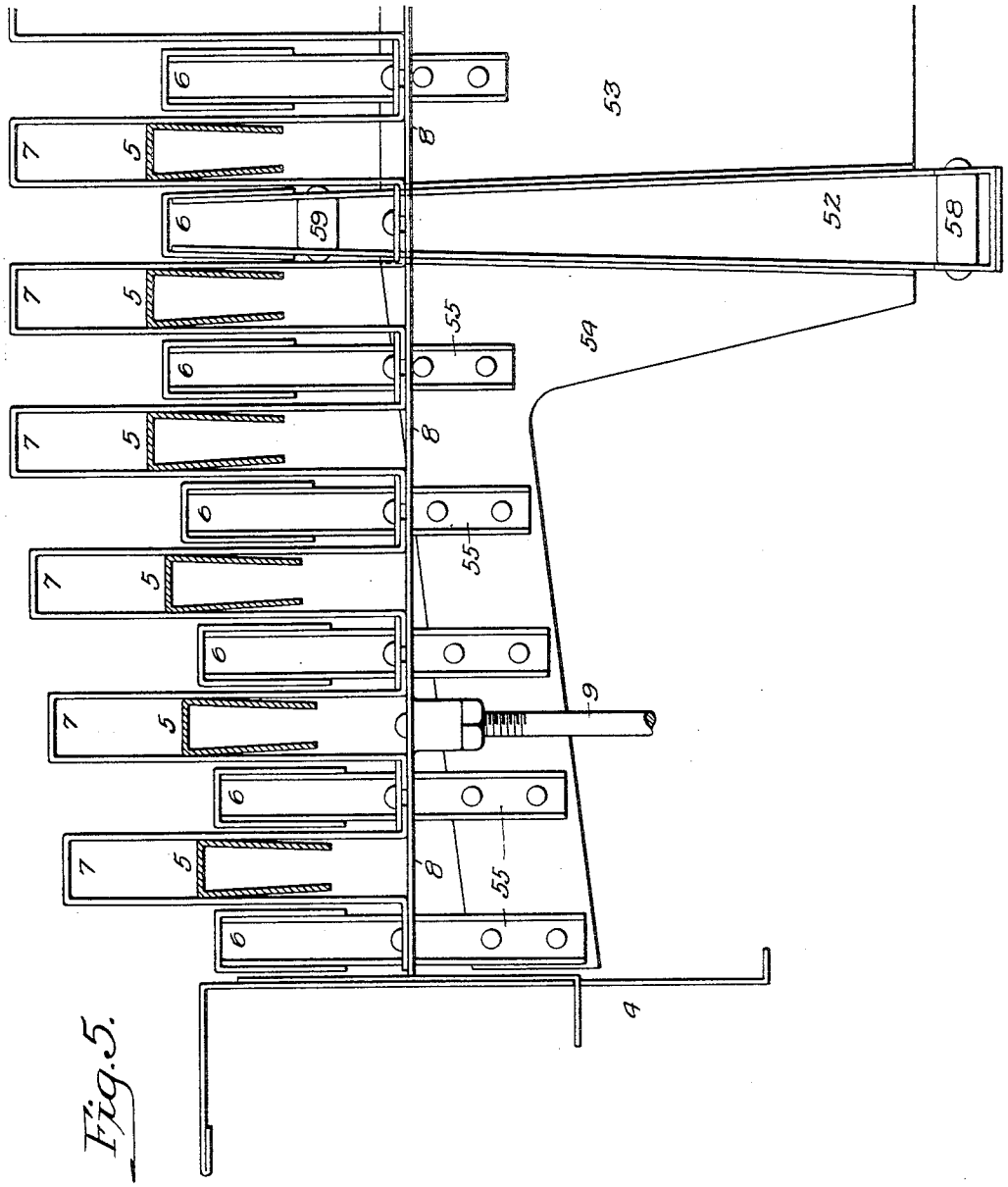


Fig. 5.

Inventor -
Harry Coulston
by his Attorneys -
Howson & Howson

H. COULSTON.

RECEIVING TABLE FOR DRIERS AND OTHER MACHINES.

APPLICATION FILED FEB. 24, 1916.

1,189,064.

Patented June 27, 1916.

8 SHEETS—SHEET 5.

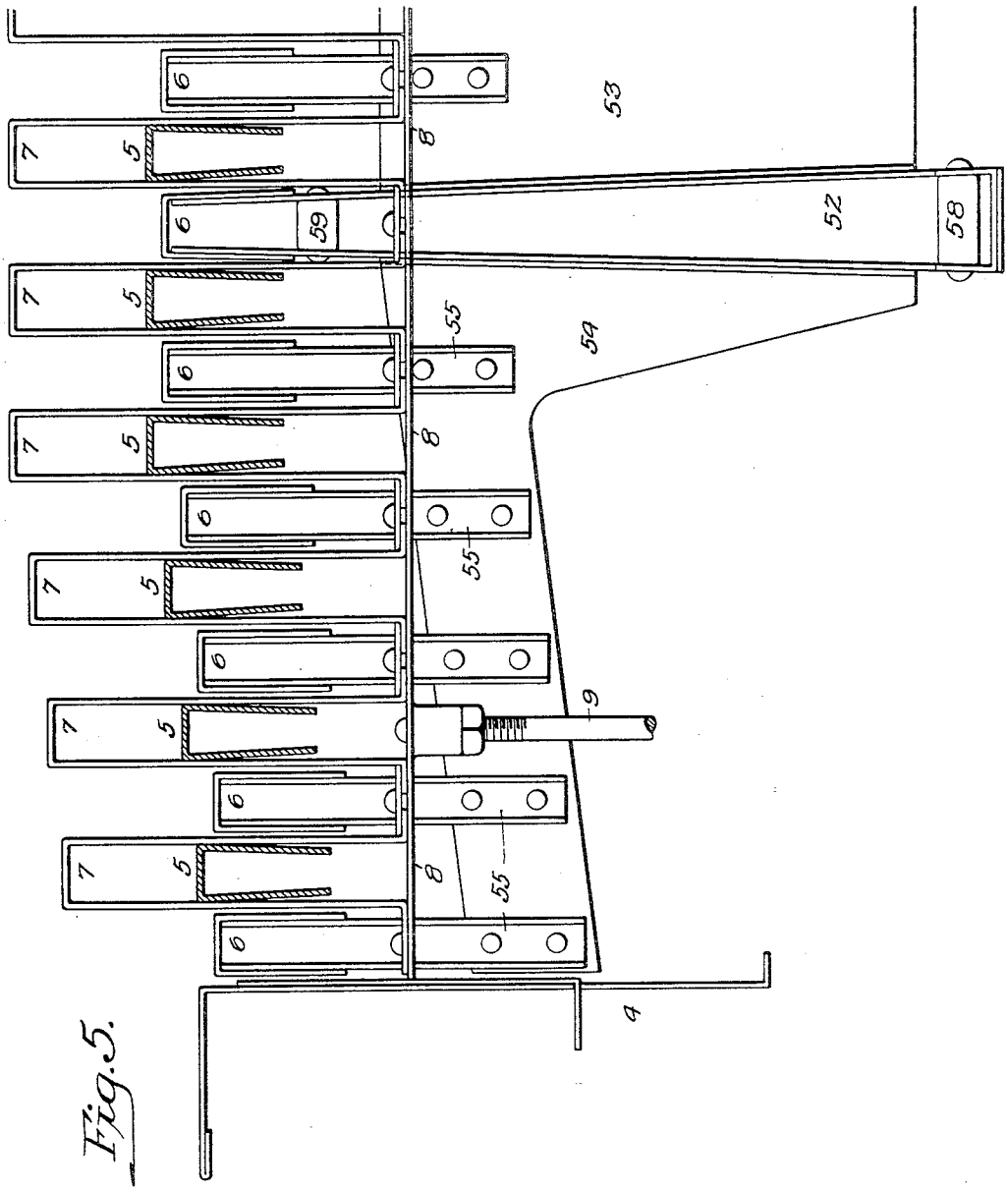


Fig. 5.

Inventor.
Harry Coulston
by his Attorneys.
Howson & Howson

H. COULSTON.

RECEIVING TABLE FOR DRIERS AND OTHER MACHINES.

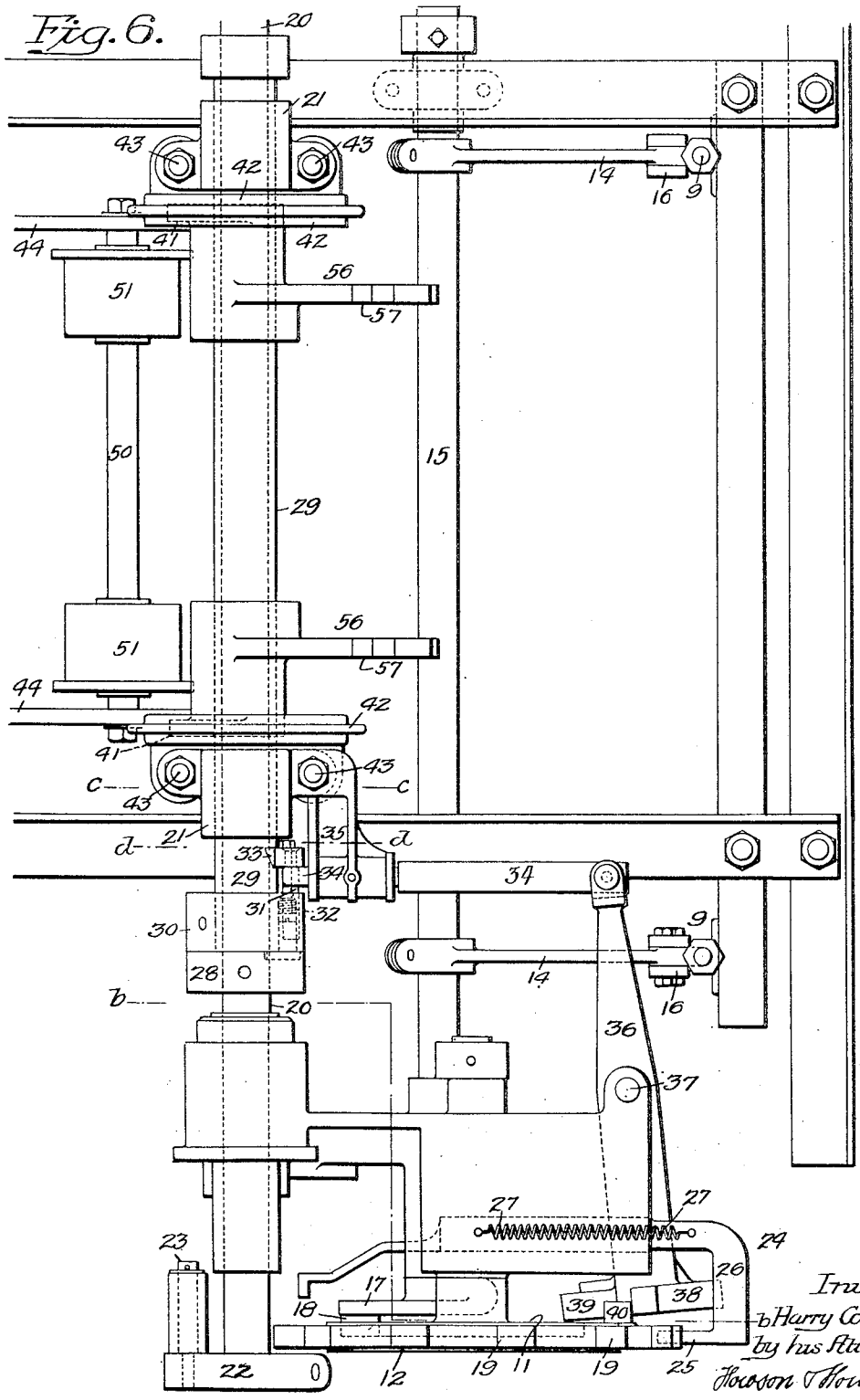
APPLICATION FILED FEB. 24, 1916.

1,189,064.

Patented June 27, 1916.

8 SHEETS—SHEET 6.

Fig. 6.



Inventor
by Harry Coulston
by his Attorneys
Howson & Howson

H. COULSTON.

RECEIVING TABLE FOR DRIERS AND OTHER MACHINES.

APPLICATION FILED FEB. 24, 1916.

1,189,064.

Patented June 27, 1916.

8 SHEETS—SHEET 7.

Fig. 7.

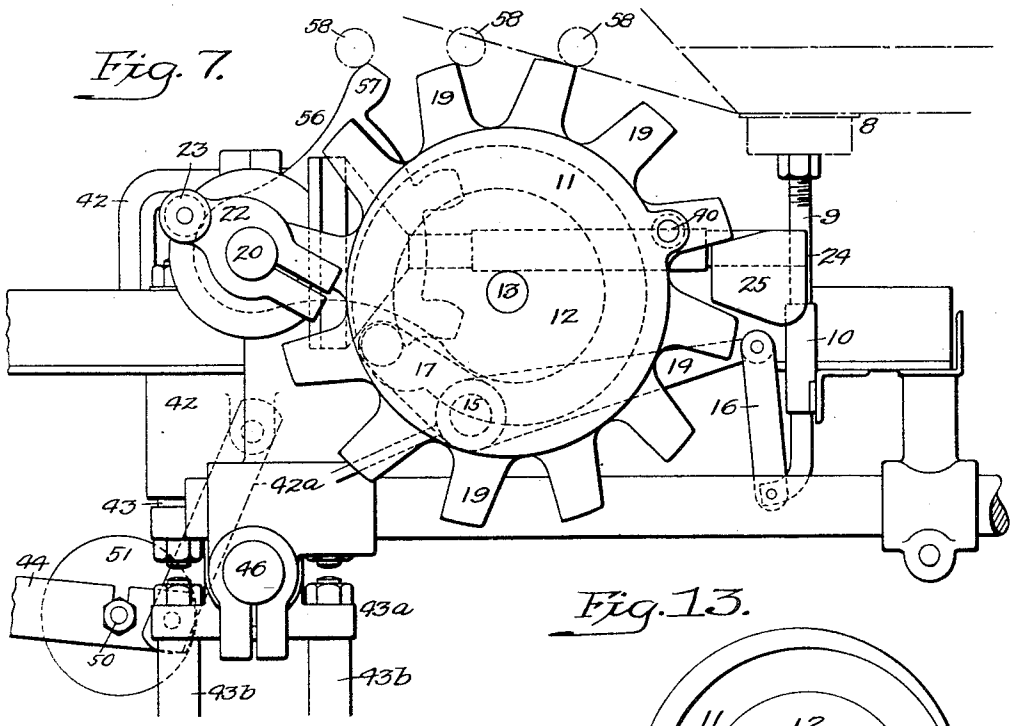


Fig. 13.

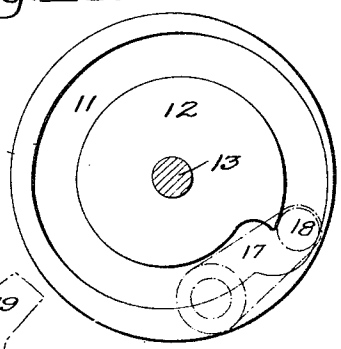


Fig. 8.

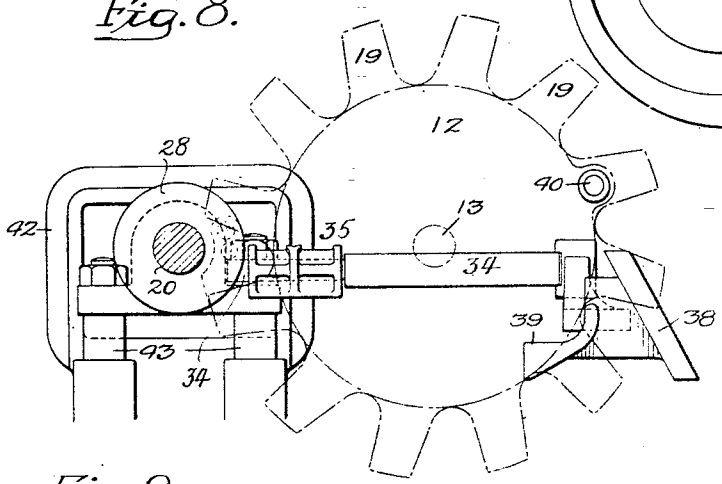
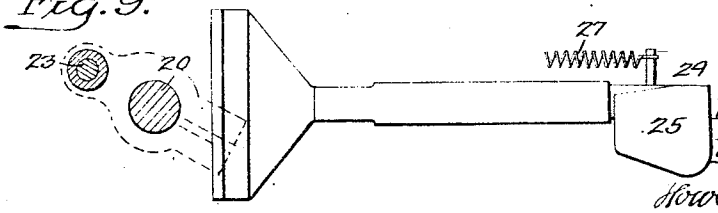


Fig. 9.



Inventor:
Harry Coulston
by his Attorneys
Howson & Howson

H. COULSTON.

RECEIVING TABLE FOR DRIERS AND OTHER MACHINES.

APPLICATION FILED FEB. 24, 1916.

1,189,064.

Patented June 27, 1916.

8 SHEETS—SHEET 8.

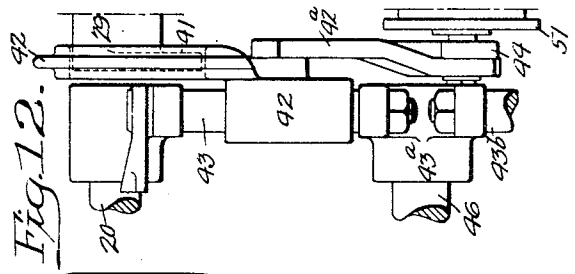


Fig. 12.

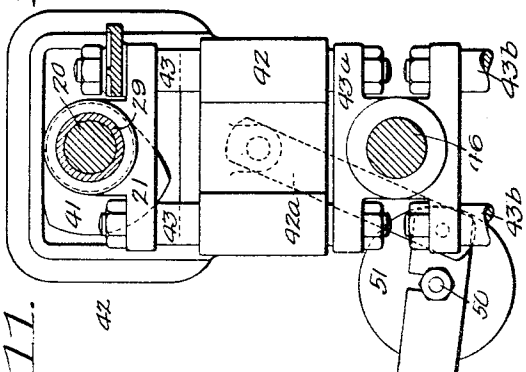


Fig. 11.

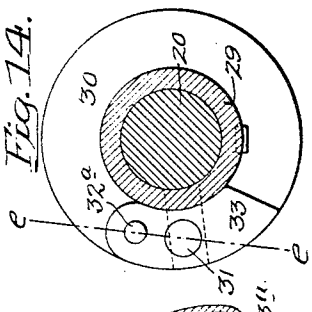


Fig. 14.

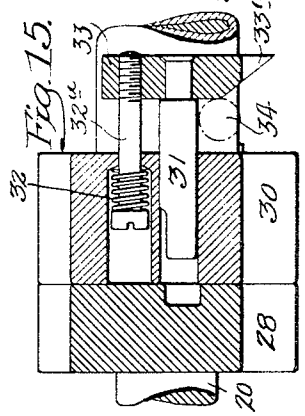


Fig. 15.

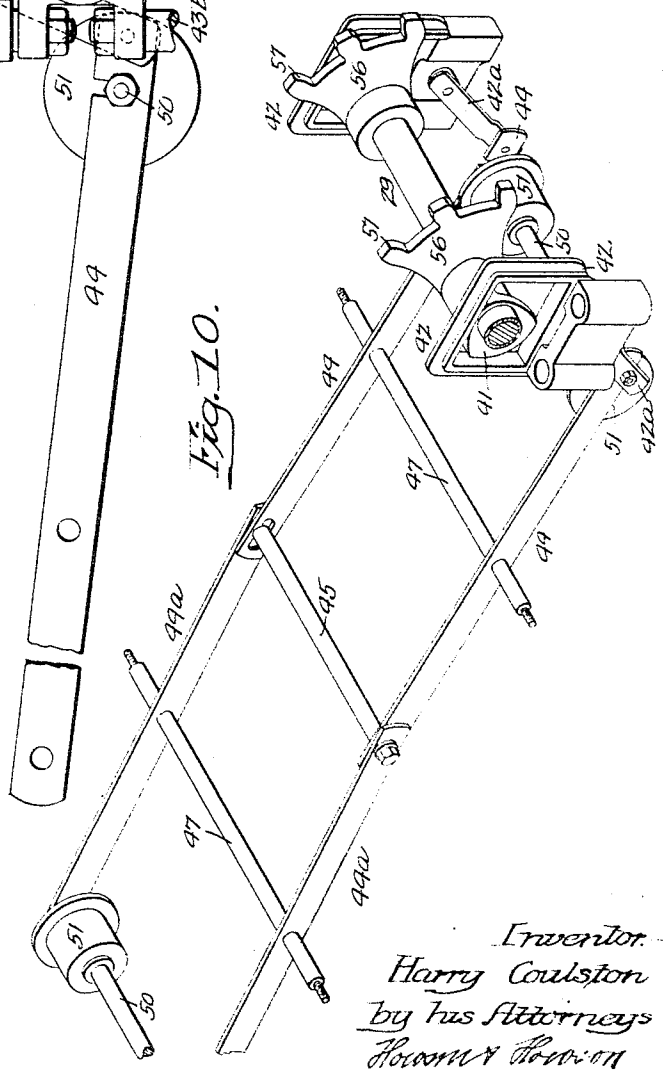


Fig. 10.

Inventor.
Harry Coulston
by his Attorneys
Howson & Howson

UNITED STATES PATENT OFFICE.

HARRY COULSTON, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE PHILADELPHIA TEXTILE MACHINERY COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

RECEIVING-TABLE FOR DRIERS AND OTHER MACHINES.

1,189,064. Specification of Letters Patent. Patented June 27, 1916.

Application filed February 24, 1916. Serial No. 80,226.

To all whom it may concern:

Be it known that I, HARRY COULSTON, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Receiving-Tables for Driers and other Machines, of which the following is a specification.

My invention relates to an improved table used particularly in connection with a stocking drier of the type in which stockings are placed upon forms mounted on traveling mechanism which carries them into a drying chamber. After the forms leave the drying chamber, the stockings are automatically removed therefrom and placed upon a table.

One object of the invention is to provide a moving table onto which the stockings are placed after they have been removed from the forms.

A further object of the invention is to provide means for piling stockings in certain numbers and conveying them intermittently to one side of the machine.

The invention also relates to certain details which will be fully described hereinafter.

In the accompanying drawings: Figure 1 is a plan view of my improved table for stocking driers; Fig. 2 is an end view; Fig. 3 is a side view; Fig. 4 is a plan view with the top removed; Fig. 5 is an enlarged sectional view on the line *a*—*a*, Fig. 1; Fig. 6 is an enlarged plan view of the front of the machine with the top removed and showing the details of the operating mechanism; Fig. 7 is an end view of the machine illustrated in Fig. 6; Fig. 8 is a sectional view on the line *b*—*b*, Fig. 6; Fig. 9 is a side view of the sliding locking bar and operating shaft; Fig. 10 is a detailed perspective view of the means for raising and lowering the carrying frame; Fig. 11 is a sectional view on the line *c*—*c*, Fig. 6; Fig. 12 is a side view of the mechanism illustrated in Fig. 11; Fig. 13 is a rear view of one of the cams for operating the receiving bars; Fig. 14 is a sectional view on the line *d*—*d*, Fig. 6, and Fig. 15 is a sectional view on the line *e*—*e*, Fig. 14.

Referring to the drawings, the drying machine is shown by dotted lines and is indicated by the reference numeral 1. This drying machine and the mechanism for removing the stockings from the forms are of the types fully illustrated in the Letters Patent granted to Coulston and Schwartz on the 26th day of January, 1915, No. 1,126,619.

While my improved table is designed especially to be used in connection with the drying machine mentioned above, it will be understood that it may be used with other machines for accomplishing the same purpose, or it may be used for counting and sorting stockings, or other articles, which are placed on the table by hand.

Before describing the details of the invention, I would state that the mechanism is so constructed that as the stockings are removed from the forms they are placed, one upon another, on a portion of the table and when a given number, a dozen for instance, has been placed in a suitable pile, then the mechanism is actuated so as to shift the pile to one side, allowing a new pile to be formed with the same number of stockings. As pile after pile is formed the previously formed piles are intermittently moved toward the opposite end of the table and they are removed from this table to the pressing room, or to the packing room, according to the class of stockings being handled.

2, 2 are the forward supports for the frame of the machine made in any suitable manner.

3 is the support and 4 is the main frame extending from one end of the machine to the other. Secured to this main frame is a series of longitudinal bars 5, which are fixed to the frame and are made in U-shaped form, as clearly shown in cross section, Fig. 5, and form the fixed section of the table. These bars are spaced a certain distance apart and mounted in the spaces are longitudinally movable bars 6. These bars not only have a longitudinal movement, but they also have a vertical movement so as to lift a pile of stockings from the fixed bars 5 and to carry them to the rear a certain distance, allowing it to rest again upon the fixed bars. The bars 6 form the transfer section of the table.

7, 7 are the receiving bars. These bars are short and of a width to receive a single pile of stockings. Some of the bars are longer than the others so as to accommodate the toe end of a stocking, which is at an angle to the body of the stocking. Mechanism is provided for intermittently moving the bars 7 in unison, as one stocking after another is piled thereon so that the top surface of a pile is always in a given

position in relation to the mechanism for removing a stocking from a form and the upper surface is slightly curved, as shown in Fig. 7, by elevating some of the bars a greater distance than the others to allow the stockings to drop properly onto the table. The bars 7 are made as shown in Fig. 5 of sheet metal and are clamped to a plate 8 and form the receiving section of the table. The section is carried by two vertical rods 9 which are adapted to guides 10 on the frame 4, and a vertical motion is given to the rods 9 and bars 7 by a cam 11 on a wheel 12 mounted on a shaft 13. This cam is clearly shown in Figs. 3, 7 and 13. Arms 14 are mounted on a rock shaft 15 and these arms are connected by links 16 to the lower ends of the rods 9, as clearly shown in Figs. 6 and 7, and on one end of the rock shaft 13 is an arm 17 having a pin 18, which enters the cam 11, as shown clearly in Fig. 13. The wheel 12 is intermittently moved as each stocking is placed upon a pile and, in the present instance, has twelve teeth 19 and means is provided for striking the teeth and for moving the wheel a given distance. It will be noticed that the cam is so formed that, as the wheel turns at each intermittent movement, the receiving table will be lifted a distance equal to about the thickness of a stocking and when a pile of twelve stockings is on the table, then the cam will drop the table so that the pile of stockings will be lowered to such a position that it will be lifted off of this receiving section of the table by the bars 6 forming the transfer section of the table. This transfer section is elevated a given distance and then moved longitudinally so as to carry the pile of stockings to the rear a given distance so that they may be clear of the receiving section, which is again elevated by the cam to receive the first stocking of another pile.

20 is the main driving shaft adapted to bearings 21 on the frame of the machine. This shaft may be driven independently or from the mechanism of the drying machine. On one end of the shaft is an arm 22 having a pin 23 on which is a roller, and this pin enters the space between the teeth 19 of the wheel 12 at each revolution of the shaft 20 and moves the wheel the distance of one tooth. In order to lock the wheel after it has been moved, I provide a bolt 24, shown in Figs. 6, 7, and 9, and this bolt has a projecting portion 25, which engages the teeth as clearly shown in Fig. 7, and has a broad bearing surface 26 which is in the path of the roller on the pin 23. This bolt is forced into engagement with the teeth of the wheel by a spring 27 attached at one end to the bolt and at the other end to a fixed portion of the machine.

I will now describe the mechanism for operating the transfer section of the table. On the shaft 20 is a collar 28 and on a hollow shaft 29 is a collar 30. The hollow shaft 29 is mounted on the shaft 20 and its collar 30 is located in close proximity to the collar 28. Mounted on the collar 30 is a bolt 31, Figs. 14 and 15, which is arranged to enter an opening in the collar 28 and a spring 32 tends to force the bolt into the opening in the collar 28. This spring is mounted on a separate pin 32^a and is secured to a plate 33 to which the bolt 31 is also secured. The plate has a cam surface 33^a arranged to be engaged by a plunger 34 adapted to a bearing 35 on the frame of the machine. This plunger is connected to a lever 36 pivoted at 37. The lever carries at its outer end an inclined plate 38 and a guide 39, and on the wheel 12 is a pin 40 which enters the space between the plate 38 and the guide 39 as the wheel rotates, withdrawing the plunger 34 and allowing the spring 32 to force the locking bolt 31 into the opening in the collar 28 so that during this interval the hollow shaft 29 will turn the shaft 20. Secured to the hollow shaft are two cams 41 shown clearly in Figs. 6, 10, 11 and 12, and these cams are mounted in housings 42 guided on rods forming part of the frame 2 of the machine. The rods 43 in the present instance are attached to a head 43^a which, in turn, is supported by rods 43^b extending to the base, as clearly shown in Fig. 3. The heads 43^a are connected together by a horizontal bar 46, Fig. 2, and this bar 46 also supports the overhanging mechanism carried by the frame 46^a. The housings 42 are connected by links 42^a to longitudinal bars 44, which are connected, in turn, to bars 44^a by a transverse rod 45. These bars are slotted so as to allow them to play freely on the rod 45 and connecting the rods of each pair are pivot bars 47 adapted to bearings 48 in the supporting angle bars 49 secured to the frame 4. On the outer ends of each of the bars 44 and 44^a are shafts 50 on which are mounted rollers 51. These rollers are preferably flanged, as shown, and resting on the rollers are two independently projecting frames 52 to which the longitudinally movable bars 6 are secured. Connecting the two longitudinal plates 52 are transverse plates 53 and in line with these plates are plates 54 which extend to the sides of the frame 4, as clearly shown in Fig. 5, and attached to these transverse plates 53 and 54 are uprights 55 on which the bars are mounted. Both the bars 5 and 6 are in the form of inverted channels so as to lighten the structure and to provide a flat surface for the reception of the stockings. As the cams 41 are rotated the housings 42 are raised and this motion is communicated to the bars 44 and 44^a which lift the transfer

section of the table to such an extent that the bars 6 of the table will lift the stockings from the bars of the fixed section of the table and from the receiving portion of the table.

In order to move the transfer table longitudinally, I mount on the hollow shaft 29 two segments 56, each having three teeth 57, in the present instance, which are arranged to engage three pins 58 on the upper portion of the frame 52 of the table and three pins 59 on the lower portion of the frame 52 of the table so that when the clutch pin 31 is projected and engages the collar 28 on the shaft 20 the hollow shaft is rotated, causing the teeth 57 of the segments 56 to engage the upper pins 58 and move the table longitudinally as it is being raised, or after it has been raised, according to the set of the cams. As the hollow shaft continues its movement the teeth of the segments pass the pins 58 and engage the lower pins 59 and return the transfer section of the table to its first position. Thus the cams 41 lift the section while the segments 56 move it longitudinally. Both movements are intermittent so that the piles of stockings are moved to the rear after another pile of stockings has been placed on the receiving section of the table.

The operation of the machine is as follows: When the receiving table is at its highest position, as in Fig. 2, the first stocking is placed thereon, then the table drops about one-eighth of an inch and another stocking is placed upon the first stocking and so on until there are twelve stockings in the pile, in the present instance. This vertical movement of the table is accomplished through the medium of the cam on the timing wheel 12, the cam being cut so that the entire movement is about one and one-half inches. When the timing wheel has made one revolution twelve stockings should be on the receiving table. As the movement of the main shaft continues the pin 41 on the timing wheel 12 withdraws the plunger 34, releasing the bolt 31, which is shot by its spring into engagement with the collar 28 on the driving shaft and motion is imparted to the hollow shaft and the cams 41 and segments 56 secured thereto. On the rotation of the hollow shaft the transfer table composed of the bars 6 is raised and moved longitudinally toward the rear of the machine. This action lifts the piled stockings from the receiving section and delivers them onto the fixed section of the table and, on the continued movement of the hollow shaft, the transfer section composed of the bars 6 is lowered and returned to its first position. This operation is repeated so that on the next cycle the pile previously placed on the fixed section will be moved a given distance to the rear, while a fresh pile will take its place, and this is repeated until there are a number of piles on the fixed section of the table.

I claim:

1. The combination in moving tables, of a fixed section consisting of a series of longitudinally arranged bars; a transfer section, also consisting of bars alternating with the first mentioned bars; a receiving section consisting of a series of short bars and arranged to move vertically; means for intermittently lowering the last mentioned section; and means for intermittently moving the transfer section when the receiving section has been lowered so that a pile of material on the receiving section will be transferred by the transfer section onto the fixed section at the rear of the receiving section.

2. The combination in a moving table, of a fixed section consisting of a series of bars longitudinally arranged and spaced apart; a transfer section consisting of a series of longitudinally movable bars located in the spaces between the fixed bars; a receiving section consisting of short bars spanning the fixed bars at one end of the table; a cam for raising the receiving table and for gradually lowering said table as one stocking after another is placed thereon; and means for moving the transfer section so that it will remove a pile of stockings from the receiving section of the table and will place them on the fixed section thereof at the rear end of the receiving section.

3. The combination in a moving table, of a fixed section consisting of a series of longitudinal bars spaced apart; a transfer section consisting of a series of bars connected together and located in the spaces between the fixed bars; means for raising and lowering the transfer section; means for longitudinally reciprocating the same; a receiving table consisting of a series of short bars; and means for vertically moving said receiving section so that as one stocking after another is piled on the receiving section the said section is lowered, the parts being so timed that the transfer section will remove the pile of stockings on the receiving section and will deposit it on the fixed section of the table.

4. The combination in a table, of a fixed section consisting of a series of longitudinally arranged bars spaced apart; a transfer section also consisting of a series of longitudinal bars, said bars being connected together and alternating with the fixed bars of the table; means for moving the transfer section longitudinally; means for raising and lowering said transfer section; a receiving section consisting of a series of short bars located directly above the fixed bars of the table; and means for elevating said section to its full height and means for intermittently lowering the table, as one stocking after another is placed there-

on so that a pile of stockings can be placed on the receiving section and then transferred from said receiving section to the fixed section of the table.

5. The combination in a table, of a fixed section consisting of a series of longitudinal bars spaced apart; a transfer section consisting of a frame on which a series of longitudinal bars is mounted; the bars of the transfer section alternating with those of the fixed section of the table; a frame; housings mounted on the frame so that they are free to move vertically; a shaft; cams on the shaft for raising the housings; pivoted bars connected to the housings and supporting the frame of the transfer section of the table so that, as the cams are rotated, the transfer section will be raised; and means for imparting a longitudinal movement to the table.

6. The combination in a table, of a fixed section consisting of a series of longitudinal bars spaced apart; a transfer section consisting of a frame on which a series of longitudinal bars is mounted; the bars of the transfer section alternating with those of the fixed section of the table; a frame; housings mounted on the frame so that they are free to move vertically; a shaft; cams on the shaft for raising the housings; pivoted bars connected to the housings and supporting the frame of the transfer section of the table so that, as the cams are rotated, the transfer section will be raised; segments on the shaft; teeth on the segments; and upper and lower rows of pins on the frame of the transfer section so that, as the table is raised, the segments will engage the table and will move it longitudinally, transferring a pile of stockings from one part of the fixed table to another.

7. The combination of a fixed section consisting of a frame and a series of longitudinal bars secured thereto and spaced apart; a transfer section consisting of a movable frame and a series of longitudinal bars mounted thereon, the bars of the movable frame alternating with the bars of the fixed frame; longitudinally arranged bars pivoted to the fixed frame and pivotally-connected supporting rollers carried by the opposite ends of the bars; housings connected to the bars and cams for operating the housings; a hollow shaft on which the cams are mounted; and mechanism by which the said hollow shaft is coupled to the main driving shaft when it is desired to raise the transfer section to move it longitudinally.

8. The combination in a table, of a fixed frame having longitudinally fixed bars secured thereto and spaced apart; a transfer section consisting of a frame having longitudinal bars alternating with the bars of the fixed frame and having two series of pins; a hollow shaft having segments meshing with the pins and arranged to reciprocate the transfer section; and means for elevating the said section prior to the rearward movement thereof, said means allowing the section to lower prior to its longitudinal return movement.

9. The combination in a table, of a fixed section; a transfer section and a receiving section; a main driving shaft; a toothed wheel; a pin on the shaft adapted to turn the wheel intermittently; means for locking the wheel in position; a cam on the wheel; a rock shaft having an arm provided with a pin engaging the cam; two arms on said shaft; rods supporting the receiving section of the table and adapted to bearings on the frame of the machine; and links connecting the last mentioned arms with the rods so that as the toothed wheel is rotated the receiving section of the table will be gradually lowered and then returned to its first position.

10. The combination in a table, of a fixed section; a transfer section and a receiving section; a driving shaft having a collar thereon; an opening in the collar; a hollow shaft mounted on the driving shaft and having a collar; a bolt carried by the collar of the hollow shaft and arranged to be projected into the opening in the collar of the driving shaft; a cam plate carrying the bolt; a plunger arranged to engage the cam plate and to draw the bolt out of engagement with the collar of the driving shaft; a rotating toothed wheel; means on the driving shaft for rotating said wheel a tooth at a time; a pin on said toothed wheel; a lever arranged to engage the pin and connected to the plunger so that on each full revolution of the wheel the plunger will be retracted to release the bolt so as to couple the hollow shaft with the driving shaft and means actuated by the hollow shaft for operating the transfer section of the table.

11. The combination in a table, of a fixed section, a transfer section and a receiving section; a main driving shaft; a hollow shaft mounted on said driving shaft; automatic means for clutching the hollow shaft to the driving shaft; two cams on the hollow shaft; two toothed segments also on the hollow shaft; housings in which the cams are located; means on the frame for guiding the housings; pivoted bars connected to the housings and supporting the transfer section of the table; upper and lower pins on the table arranged to be engaged by the toothed segments so that as the hollow shaft is turned the transfer section will be raised toward the rear and as it is lowered it will be turned to its first position; and means for lowering and raising the receiving section so

that a pile of stockings on the receiving section will be transferred to the fixed section by the transfer section.

12. The combination in a table, of a fixed section and a transfer section; a driving shaft; a hollow shaft on the driving shaft; means actuated by the hollow shaft for operating the transfer section of the table; a collar on the driving shaft; a collar on the hollow shaft; a plate; a bolt and a pin secured to the said plate and adapted to openings in the last mentioned collar; a spring on the pin arranged to force the bolt into an opening in the first mentioned collar so as to lock the hollow shaft to the driving shaft; a plunger acting on the bolt to withdraw the bolt; and automatic means for operating the plunger.

13. The combination in a table arranged to receive stockings from a stocking drying machine, of a fixed section consisting of a series of longitudinal bars spaced apart; a transfer section also consisting of a series of longitudinal bars; a frame for supporting the bars, said bars of the transfer section alternating with the fixed bars; means for raising the said transfer bars and moving them toward the rear; a receiving section consisting of a series of short bars located directly above the forward end of the fixed bars, some of the bars of the receiving section being of greater length than the others, the bars of the receiving section nearer the drying machine being less in height than the remainder of the bars.

14. The combination in a table, of a fixed section, a transfer section and a receiving section, the fixed section consisting of a series of longitudinal bars spaced apart, the transfer section also consisting of a frame having a series of longitudinal bars spaced apart and the receiving section consisting of a frame having a series of short U-shaped bars secured thereto, the bars extending over the bars of the fixed frame and having flanged lower ends secured to the said frame; means for operating the receiving section; and means for operating the transfer section.

HARRY COULSTON.